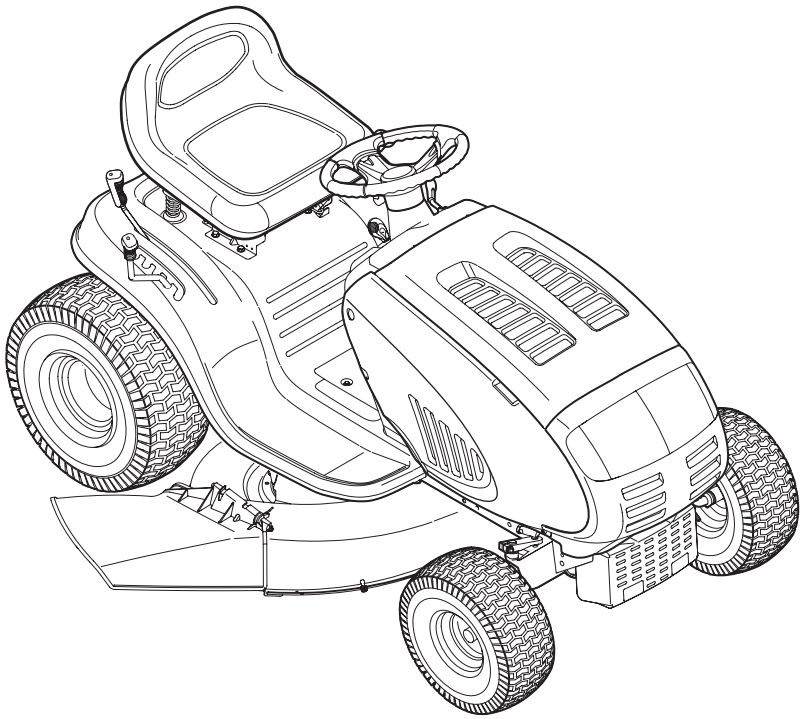
Operator's Manual



Lawn Tractor
Model: CLT-538

IMPORTANT: READ SAFETY RULES AND INSTRUCTIONS CAREFULLY.

60 Ottawa Street South, KITCHENER, ONTARIO CANADA N2G 3S7

PRINTED IN U.S.A.

772C0763
(1/12/2005)

TABLE OF CONTENTS

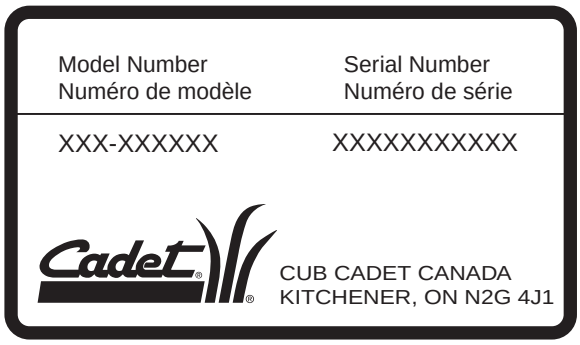
Content	Page	Content	Page
Customer Support	2	Maintaining Your Lawn Tractor	18
Important Safe Operation Practices	3	Service	19
Slope Gauge	7	Off Season Storage	23
Tractor Set-Up	8	Attachments & Accessories	23
Know Your Lawn Tractor	10	Troubleshooting	24
Operating Your Lawn Tractor	13	Warranty	25
Making Adjustments	16		

FINDING MODEL NUMBER

This Operator's Manual is an important part of your new garden tractor. It will help you assemble, prepare and maintain the unit for best performance. Please read and understand what it says.

Before you start assembling your new equipment, please locate the model plate on the equipment and copy the information from it in the space provided below. This information will be necessary to use the manufacturer's web site and/or help from the Customer Support Department or an authorized service dealer.

- You can locate the model number by looking beneath the seat. A sample model plate is explained below.



Copy the model number here: _____

Copy the serial number here: _____

ENGINE INFORMATION

The engine manufacturer is responsible for all engine-related issues with regards to performance, power-rating, specifications, warranty and service. Please refer to the engine manufacturer's Owner's/Operator's Manual packed separately with your unit for more information.

CALLING CUSTOMER SUPPORT

Please do NOT return the unit to the retailer from which it was purchased, without first contacting Customer Support.

If you have difficulty assembling this product or have any questions regarding the controls, operation or maintenance of this unit, please call your service dealer.

Please have your unit's model number and serial number ready when you call. See previous section to locate this information.

SECTION 1: IMPORTANT SAFE OPERATION PRACTICES

WARNING: This symbol points out important safety instructions which, if not followed, could endanger the personal safety and/or property of yourself and others. Read and follow all instructions in this manual before attempting to operate this machine. Failure to comply with these instructions may result in personal injury. When you see this symbol—heed its warning.

DANGER: This machine was built to be operated according to the rules for safe operation in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. This machine is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

GENERAL OPERATION

1. Read, understand, and follow all instructions on the machine and in the manual(s) before attempting to assemble and operate. Keep this manual in a safe place for future and regular reference and for ordering replacement parts.
2. Be familiar with all controls and their proper operation. Know how to stop the machine and disengage them quickly.
3. Never allow children under 14 years old to operate this machine. Children 14 years old and over should read and understand the operation instructions and safety rules in this manual and should be trained and supervised by a parent.
4. Never allow adults to operate this machine without proper instruction.
5. To help avoid blade contact or a thrown object injury, keep bystanders, helpers, children and pets at least 75 feet from the machine while it is in operation. Stop machine if anyone enters the area.
6. Thoroughly inspect the area where the equipment is to be used. Remove all stones, sticks, wire, bones, toys, and other foreign objects which could be picked up and thrown by the blade(s). Thrown objects can cause serious personal injury.
7. Plan your mowing pattern to avoid discharge of material toward roads, sidewalks, bystanders and the like. Also, avoid discharging material against a wall or obstruction which may cause discharged material to ricochet back toward the operator.
8. Always wear safety glasses or safety goggles during operation and while performing an adjustment or repair to protect your eyes. Thrown objects which ricochet can cause serious injury to the eyes.
9. Wear sturdy, rough-soled work shoes and close-fitting slacks and shirts. Loose fitting clothes and jewelry can be caught in movable parts. Never operate this machine in bare feet or sandals.
10. Be aware of the mower and attachment discharge direction and do not point it at anyone. Do not operate the mower without the discharge cover or entire grass catcher in its proper place**.**
11. Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade(s) can amputate hands and feet.
12. A missing or damaged discharge cover can cause blade contact or thrown object injuries.
13. Stop the blade(s) when crossing gravel drives, walks, or roads and while not cutting grass.
14. Watch for traffic when operating near or crossing roadways. This machine is not intended for use on any public roadway.
15. Do not operate the machine while under the influence of alcohol or drugs.
16. Mow only in daylight or good artificial light.
17. Never carry passengers.
18. Disengage blade(s) before shifting into reverse. Back up slowly. Always look down and behind before and while backing to avoid a back-over accident.
19. Slow down before turning. Operate the machine smoothly. Avoid erratic operation and excessive speed.
20. Disengage blade(s), set parking brake, stop engine and wait until the blade(s) come to a complete stop before removing grass catcher, emptying grass, unclogging chute, removing any grass or debris, or making any adjustments.
21. Never leave a running machine unattended. Always turn off blade(s), place transmission in neutral, set parking brake, stop engine and remove key before dismounting.
22. Use extra care when loading or unloading the machine into a trailer or truck. This unit should not be driven up or down ramp(s), because the unit could tip over, causing serious personal injury**.** The unit must be pushed manually on ramp(s) to load or unload properly.

23. Muffler and engine become hot and can cause a burn. Do not touch.
24. Check overhead clearances carefully before driving under low hanging tree branches, wires, door openings etc., where the operator may be struck or pulled from the unit, which could result in serious injury.
25. Disengage all attachment clutches, depress the brake pedal completely and shift into neutral before attempting to start engine.
26. Your machine is designed to cut normal residential grass of a height no more than 10". Do not attempt to mow through unusually tall, dry grass (e.g., pasture) or piles of dry leaves. Dry grass or leaves may contact the engine exhaust and/or build up on the mower deck presenting a potential fire hazard.
27. Use only accessories and attachments approved for this machine by the machine manufacturer. Read, understand and follow all instructions provided with the approved accessory or attachment.
28. Data indicates that operators, age 60 years and above, are involved in a large percentage of riding mower-related injuries. These operators should evaluate their ability to operate the riding mower safely enough to protect themselves and others from serious injury.
29. If situations occur which are not covered in this manual, use care and good judgment. Contact an authorized MTD Service Dealer for assistance.

SLOPE OPERATION

Slopes are a major factor related to loss of control and tip-over accidents which can result in severe injury or death. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not mow it.

For your safety, use the slope gauge included as part of this manual to measure slopes before operating this unit on a sloped or hilly area. If the slope is greater than 15 degrees as shown on the slope gauge, do not operate this unit on that area or serious injury could result.

DO:

1. Mow up and down slopes, not across. Exercise extreme caution when changing direction on slopes.
2. Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
3. Use slow speed. Choose a low enough speed setting so that you will not have to stop or shift while on the slope. Tires may lose traction on slopes even though the brakes are functioning properly. Always keep machine in gear when going down slopes to take advantage of engine braking action.
4. Follow the manufacturer's recommendations for wheel weights or counterweights to improve stability.
5. Use extra care with grass catchers or other attachments. These can change the stability of the machine.
6. Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction. Rapid engagement or braking could cause the front of the machine to lift and rapidly flip over backwards which could cause serious injury.
7. Avoid starting or stopping on a slope. If tires lose traction, disengage the blade(s) and proceed slowly straight down the slope.

DO NOT:

1. Do not turn on slopes unless necessary; then, turn slowly and gradually downhill, if possible.
2. Do not mow near drop-offs, ditches or embankments. The mower could suddenly turn over if a wheel is over the edge of a cliff, ditch, or if an edge caves in.
3. Do not try to stabilize the machine by putting your foot on the ground.
4. Do not use a grass catcher on steep slopes.
5. Do not mow on wet grass. Reduced traction could cause sliding.
6. Do not shift to neutral and coast downhill. Over-speeding may cause the operator to lose control of the machine resulting in serious injury or death.
7. Do not tow heavy pull behind attachments (e.g. loaded dump cart, lawn roller, etc.) on slopes greater than 5 degrees. When going down hill, the extra weight tends to push the tractor and may cause you to loose control. (e.g. tractor may speed up, braking and steering ability are reduced, attachment may jack-knife and cause tractor to overturn).

CHILDREN

1. Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the mowing activity. They do not understand the dangers. Never assume that children will remain where you last saw them.
    a. Keep children out of the mowing area and in watchful care of a responsible adult other than the operator.
    b. Be alert and turn machine off if a child enters the area.
    c. Before and while backing, look behind and down for small children.
    d. Never carry children, even with the blade(s) shut off. They may fall off and be seriously injured or interfere with safe machine operation.

e. Use extreme care when approaching blind corners, doorways, shrubs, trees or other objects that may block your vision of a child who may run into the machine.
f. **To avoid back-over accidents, always disengage the cutting blade(s) before shifting into reverse. The "Reverse Caution Mode" should not be used when children or others are around.**
g. Keep children away from hot or running engines. They can suffer burns from a hot muffler.
h. Remove key when machine is unattended to prevent unauthorized operation.
i. Never allow children under 14 years old to operate the machine. Children 14 years old and over should read and understand the operation instructions and safety rules in this manual and should be trained and supervised by a parent.

TOWING

1. Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.
2. Follow the manufacturers recommendation for weight limits for towed equipment and towing on slopes.
3. Never allow children or others in or on towed equipment.
4. On slopes, the weight of the towed equipment may cause loss of traction and loss of control.
5. Travel slowly and allow extra distance to stop.
6. Do not shift to neutral and coast downhill.

SERVICE

SAFE HANDLING OF GASOLINE:

1. **To avoid personal injury or property damage** use extreme care in handling gasoline. Gasoline is extremely flammable and the vapors are explosive**.** Serious personal injury can occur when gasoline is spilled on yourself or your clothes which can ignite. Wash your skin and change clothes immediately.
    a. Use only an approved gasoline container.
    b. Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.
    c. When practical, remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment on a trailer with a portable container, rather than from a gasoline dispenser nozzle.
    d. Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
    e. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
    f. Never fuel machine indoors.
    g. Never remove gas cap or add fuel while the engine is hot or running. Allow engine to cool at least two minutes before refueling.
    h. Never over fill fuel tank. Fill tank to no more than ½ inch below bottom of filler neck to allow space for fuel expansion.
    i. Replace gasoline cap and tighten securely.
    j. If gasoline is spilled, wipe it off the engine and equipment. Move unit to another area. Wait 5 minutes before starting the engine.
    k. To reduce fire hazards, keep machine free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage and remove any fuel soaked debris.
    l. Never store the machine or fuel container inside where there is an open flame, spark or pilot light as on a water heater, space heater, furnace, clothes dryer or other gas appliances.
    m. Allow a machine to cool at least 5 minutes before storing.

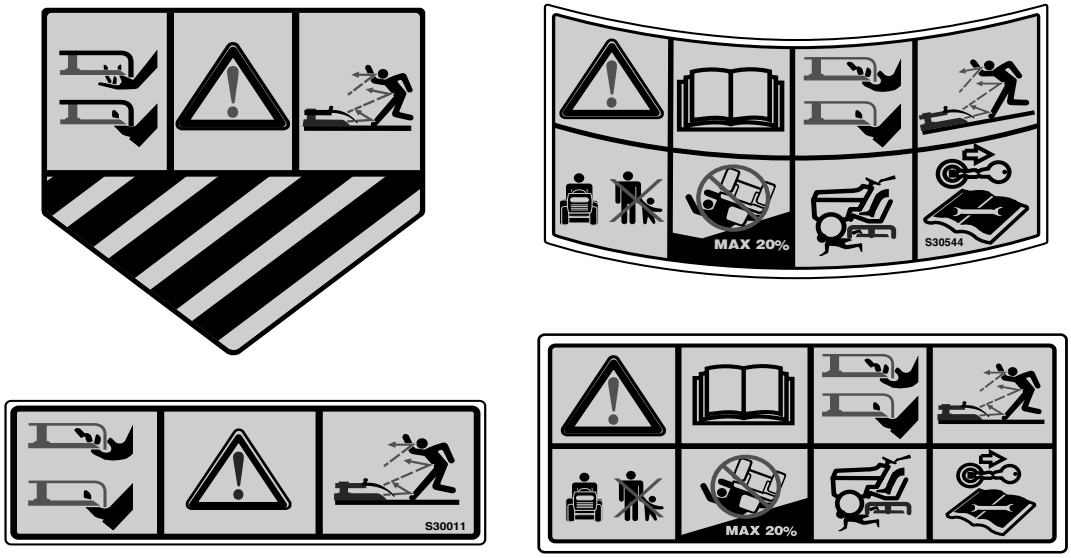
GENERAL SERVICE:

1. Never run an engine indoors or in a poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless, and deadly gas.
2. Before cleaning, repairing, or inspecting, make certain the blade(s) and all moving parts have stopped. Disconnect the spark plug wire and ground against the engine to prevent unintended starting.
3. Periodically check to make sure the blades come to complete stop within approximately (5) five seconds after operating the blade disengagement control. If the blades do not stop within the this time frame, your unit should be serviced professionally by an authorized MTD Service Dealer.
4. Check brake operation frequently as it is subjected to wear during normal operation. Adjust and service as required.
5. Check the blade(s) and engine mounting bolts at frequent intervals for proper tightness. Also, visually inspect blade(s) for damage (e.g., excessive wear, bent, cracked).
   Replace the blade(s) with the original equipment manufacturer's (O.E.M.) blade(s) only, listed in this manual. "Use of parts which do not meet the original equipment specifications may lead to improper performance and compromise safety!"
6. Mower blades are sharp. Wrap the blade or wear gloves, and use extra caution when servicing them.
7. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.

8. Never tamper with the safety interlock system or other safety devices. Check their proper operation regularly.
9. After striking a foreign object, stop the engine, disconnect the spark plug wire(s) and ground against the engine. Thoroughly inspect the machine for any damage. Repair the damage before starting and operating.
10. Never attempt to make adjustments or repairs to the machine while the engine is running.
11. Grass catcher components and the discharge cover are subject to wear and damage which could expose moving parts or allow objects to be thrown. For safety protection, frequently check components and replace immediately with original equipment manufacturer's (O.E.M.) parts only, listed in this manual. "Use of parts which do not meet the original equipment specifications may lead to improper performance and compromise safety!"
12. Do not change the engine governor settings or over-speed the engine. The governor controls the maximum safe operating speed of the engine.
13. Maintain or replace safety and instruction labels, as necessary.
14. Observe proper disposal laws and regulations for gas, oil, etc. to protect the environment.

WARNING: **YOUR RESPONSIBILITY** Restrict the use of this power machine to persons who read, understand and follow the warnings and instructions in this manual and on the machine.

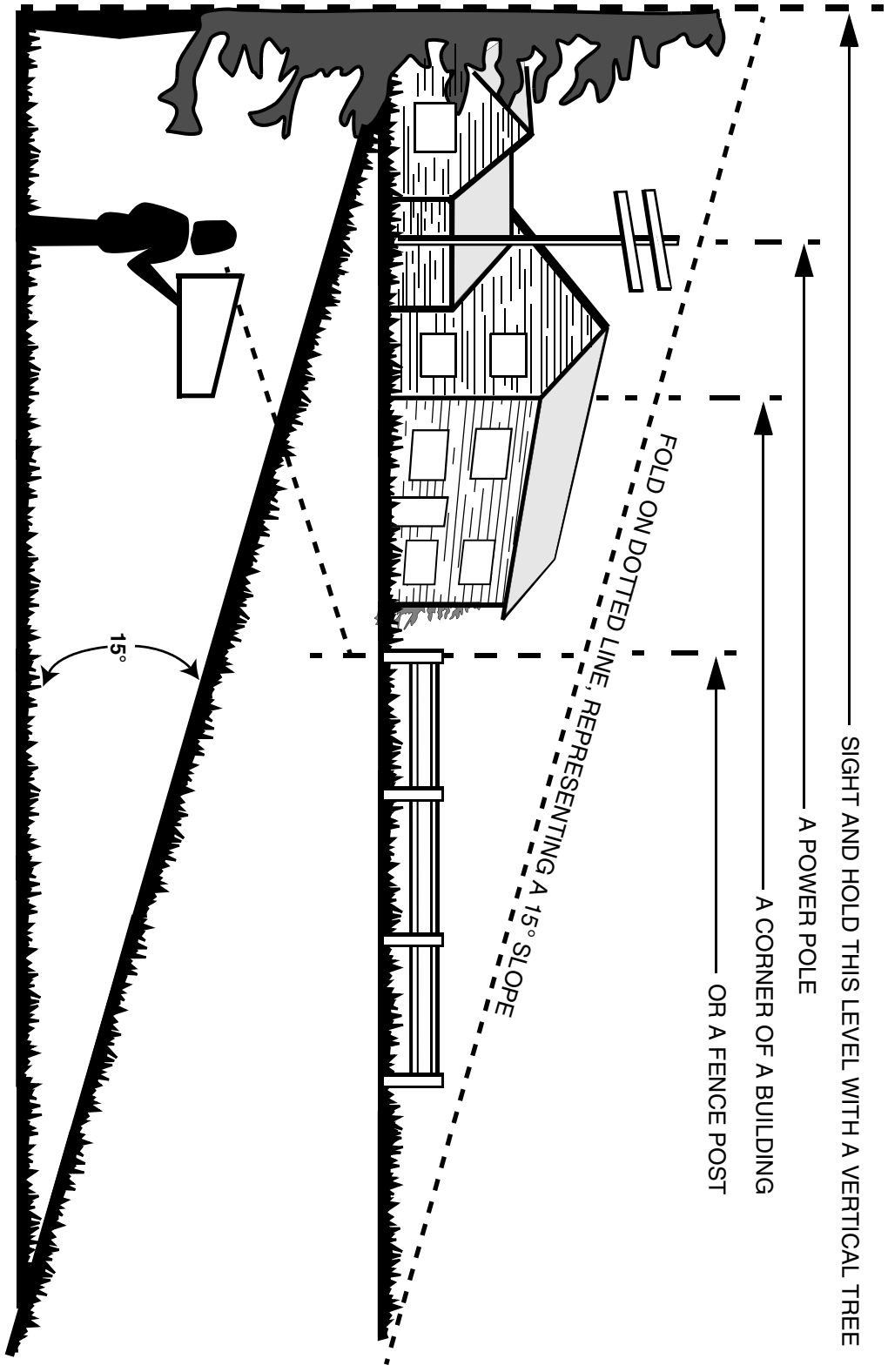
.



Safety labels found on your unit.

SECTION 2: SLOPE GAUGE

Use this page as a guide to determine slopes where you may not operate safely. **Do not operate** your equipment on such slopes.


SIGHT AND HOLD THIS LEVEL WITH A VERTICAL TREE
A POWER POLE
A CORNER OF A BUILDING
OR A FENCE POST
FOLD ON DOTTED LINE, REPRESENTING A 15° SLOPE
15°

DANGER

Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2-1/2 feet every 10 feet). A riding mower could overturn and cause serious injury. If operating a walk-behind mower on such a slope, it is extremely difficult to maintain your footing and you could slip, resulting in serious injury.

Operate RIDING mowers up and down slopes, never across the face of slopes.

Operate WALK-BEHIND mowers across the face of slopes, never up and down slopes.

SECTION 3: TRACTOR SET-UP

IMPORTANT: This unit is shipped WITHOUT GASOLINE. Check oil before starting engine. Do not overfill. After assembly, service engine with gasoline and oil as instructed in the separate engine manual packed with your unit.

NOTE: *This owner's manual covers various models of lawn tractors. The units illustrated may vary slightly from your unit. Follow only those instructions which pertain to your model lawn tractor.*

Loose Parts

Packaged with this Operator's Manual you'll find:

- One Small Clamp (726-0354)
- One 1/4-20 x 1/2-inch Screw (710-0599)
- One Oil Drain Sleeve (731-1682A)

Store the clamp and screw in a convenient place. Both will be necessary to properly secure your tractor's wire harness should you choose to purchase a front-end attachment for your lawn tractor. Refer to page 23 for a table of available attachments and accessories.

Refer to page18 for information regarding the oil drain sleeve and changing your engine oil.

Attaching the Steering Wheel

Tools Required For Assembly

(1) 1/2" socket wrench

1. The hardware for attaching the steering wheel is located under the steering wheel cap. Carefully pry off the steering wheel cap and remove the hardware.
2. Position the front wheels of the tractor so they are pointing straight forward.
3. Place the washer with the cupped side down over the steering shaft. Secure with hex bolt. See Figure 1.
4. Place the steering wheel cap over the center of the steering wheel and seat it with your hand.

Attaching The Seat

NOTE: *For shipping reasons, seats are either fastened to the tractor seat's pivot bracket with a plastic tie, or mounted backward to the pivot bracket. In either case, free the seat form its shipping position and remove the two hex screws (or knobs, on models so equipped) from the bottom of seat before proceeding with instructions below.*

1. Position the shoulder screws (found on the base of the seat) inside the slot openings in the seat pivot bracket. See Figure 2.
2. Slide the seat slightly rearward in the seat pivot bracket, lining up the rear slots in the pivot bracket with the remaining two holes in the seat's base.
3. Select desired position for the seat, and secure with the two hex screws/knobs removed. Do not overtighten. See Figure 2.

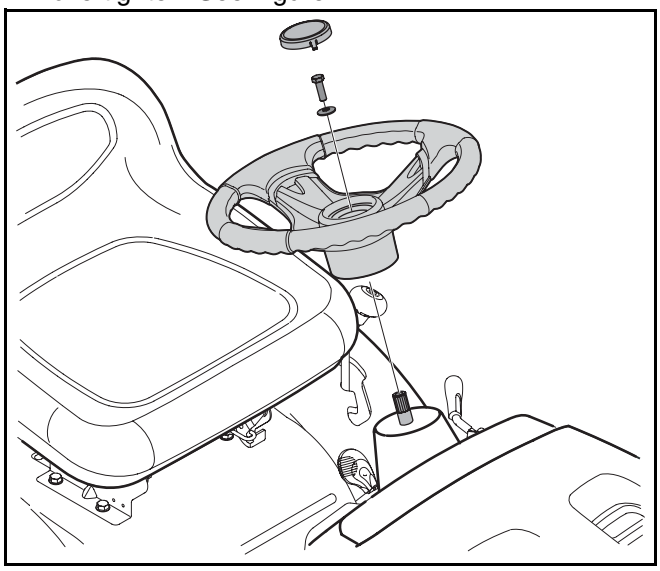


Figure 1

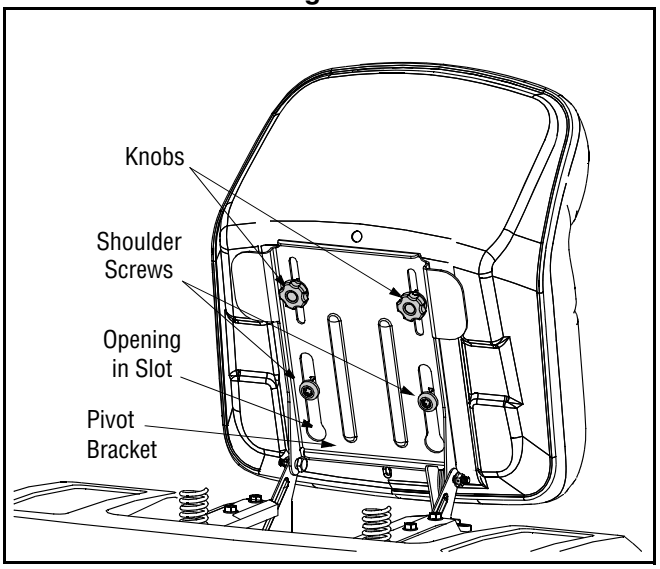


Figure 2

Gas and Oil Fill-up

The gasoline tank is located under the hood and has a capacity of 1-1/2 gallons. Do not overfill.

WARNING: Use extreme care when handling gasoline. Gasoline is extremely flammable and the vapors are explosive. Never fuel machine indoors or while the engine is hot or running. Extinguish cigarettes, cigars, pipes, and other sources of ignition.

Service the engine with gasoline and oil as instructed in the separate engine manual packed with your tractor. Read instructions carefully.

IMPORTANT: Your tractor is shipped with motor oil in the engine. However, you **MUST** check the oil level before operating. Be careful not to overfill.

Shipping Brace Removal

WARNING: Make sure the riding mower's engine is off, remove the ignition key, and set the parking brake before removing the shipping brace.

- Locate the shipping brace and accompanying warning tag found on the right side of the mower, between the discharge chute and the cutting deck. See Figure 3.

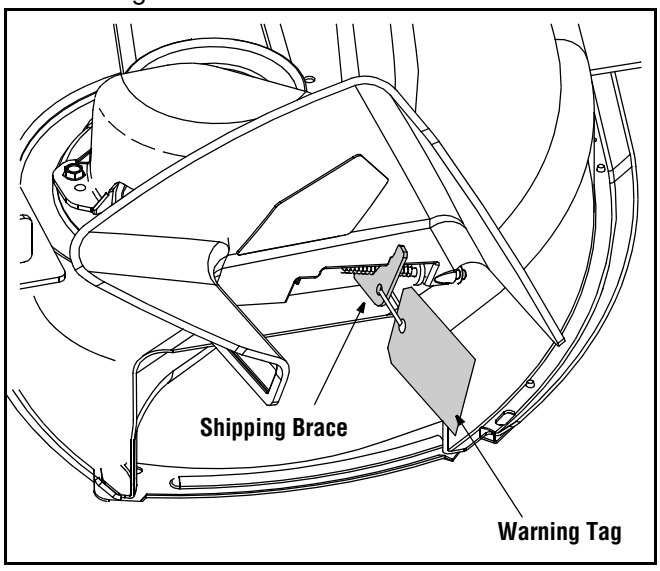


Figure 3

- While holding the discharge chute with your left hand, remove the shipping brace with your right hand by grasping it between your thumb and index finger and rotating it clockwise.

WARNING: The shipping brace, used for packaging purposes only, must be removed and discarded before operating your riding mower.

WARNING: The mowing deck is capable of throwing objects. Failure to operate the riding mower without the discharge cover in the proper operating position could result in serious personal injury and/or property damage.

Tire Pressure

WARNING: Maximum tire pressure under any circumstances is 30 psi. Equal tire pressure should be maintained at all times.

The tires on your unit may be over-inflated for shipping purposes. Reduce the tire pressure before operating the tractor. Recommended operating tire pressure is approximately 10 p.s.i for the rear tires & 14 p.s.i. for the front tires. Check sidewall of tire for maximum p.s.i.

Attaching the Battery Cables

NOTE: *The positive battery terminal is marked Pos. (+). The negative battery terminal is marked Neg. (–).*

- The positive cable (heavy red wire) is secured to the positive battery terminal (+) with a hex bolt and hex nut at the factory. Make certain that the rubber boot covers the terminal to help protect it from corrosion.
- Remove the hex bolt and wing nut from the negative cable.
- Remove the black plastic cover, if present, from the negative battery terminal and attach the negative cable (heavy black wire) to the negative battery terminal (–) with the bolt and wing nut.
- Make certain the retainer rod is in position over the battery, securing it in place. See Figure 4.

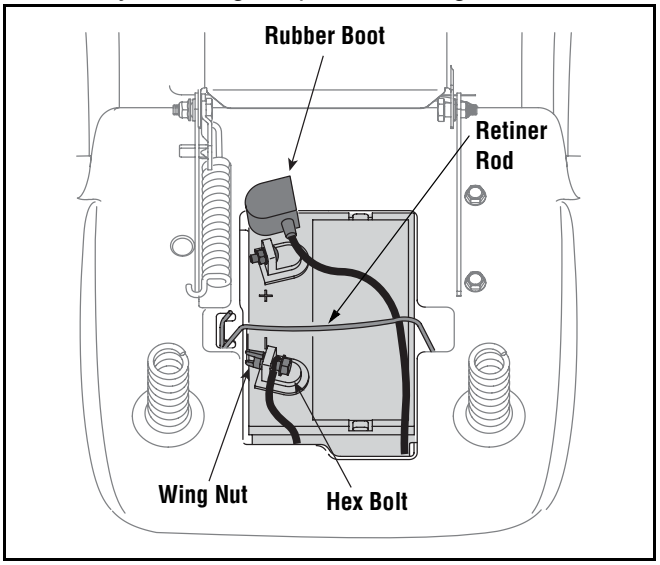


Figure 4

NOTE: *If the battery is put into service after the date shown on top of battery, charge the battery as instructed* on *page 20 of this manual prior to operating the tractor.*

SECTION 4: KNOW YOUR LAWN TRACTOR

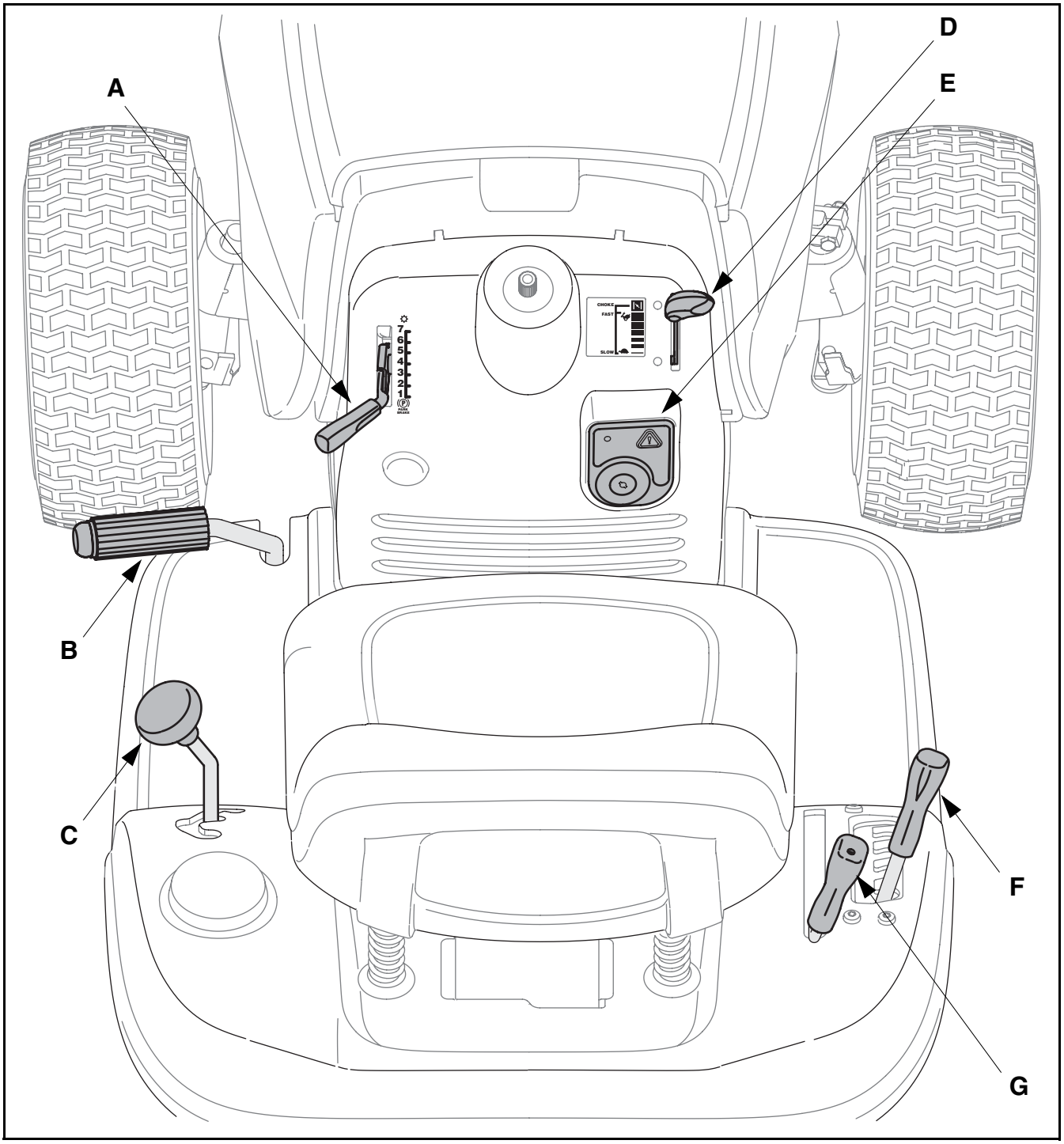
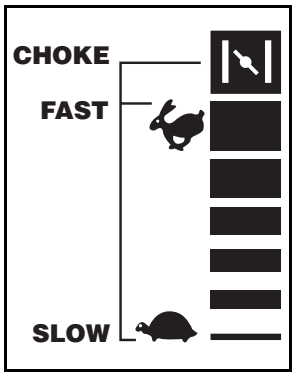


Figure 5

- **A** Speed Control Lever / Parking Brake
- **B** Clutch-brake Pedal
- **C** Shift Lever
- **D** Throttle Control Lever
- **E** Ignition Switch Module
- **F** Deck Lift Lever
- **G** PTO (Blade Engage) Lever

NOTE: *Any reference in this manual to the RIGHT or LEFT side of the tractor is observed from operator's position.*

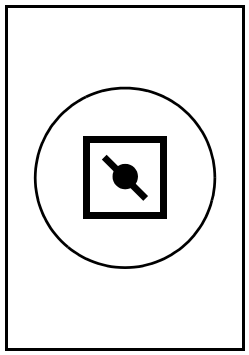
Throttle Control



The throttle control lever is located on the right side of the tractor's dash panel. This lever controls the speed of the engine and, and on certain models when pushed all the way forward, the choke control also. When set in a given position, the throttle will maintain a uniform engine speed.

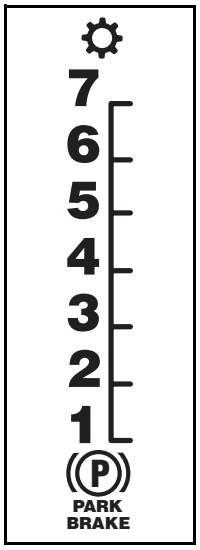
IMPORTANT: When operating the tractor with the cutting deck engaged, be certain that the throttle lever is **always** in the FAST (rabbit) position.

Choke Control



On some models, moving the throttle lever all the way forward activates the engine's choke control. On all other models, the choke control can be found on the left side of the dash panel and is activated by pulling the knob outward. Activating the choke control closes the choke plate on the carburetor and aids in starting the engine. Refer to **Starting The Engine** in the OPERATION section of this manual for detailed starting instructions.

Speed Control Lever



The speed control lever, located on the left side of the tractor's dash console, allows you to regulate the ground speed of the lawn tractor. To use, depress the clutch-brake pedal and move the lever out of the parking brake notch and forward to increase the tractor's ground speed. When a desired speed has been reached, release the lever into an appropriate notch to maintain that speed.
To slow the tractor's ground speed, depress the clutch-brake pedal and move the speed control lever rearward and release it into a notch.

Clutch-brake Pedal

The clutch-brake pedal is located on the left side of the lawn tractor, along the running board. Depress the clutch-brake pedal part way down when slowing the tractor by changing speeds (Refer to **Speed Control Lever**). Depress the pedal all the way down to engage the disc brake and bring the tractor to a complete stop.

NOTE: *The pedal must be depressed to start the engine. Refer to* **Safety Interlock Switches** *on page 13.*

Parking Brake

To set the parking brake, fully depress the clutch-brake pedal. Move the speed control lever all the way down and into the parking brake position. Release the clutch-brake pedal to allow the parking brake to engage.

To release the parking brake, depress the clutch-brake pedal and move the speed control lever out of the notches to the desired position. Release the speed control lever and the clutch-brake pedal.

NOTE: *The parking brake must be set if the operator leaves the seat with the engine running or the engine will automatically shut off.*

IMPORTANT: Always set the parking brake when leaving the tractor unattended.

Shift Lever

The shift lever is located on the left side of the fender and has three positions, FORWARD, NEUTRAL and REVERSE. The brake pedal must be depressed and the tractor must not be in motion when the moving shift lever. See Figure 6.

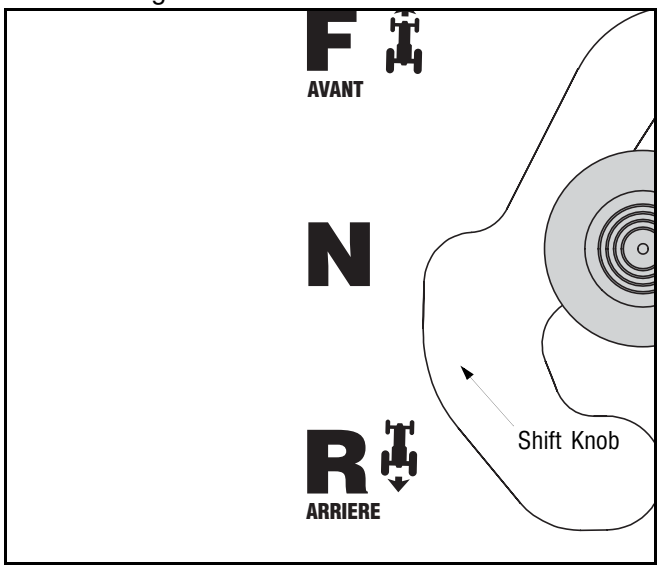


Figure 6

IMPORTANT: Never force the shift lever. Doing so may result in serious damage to the tractor's transmission.

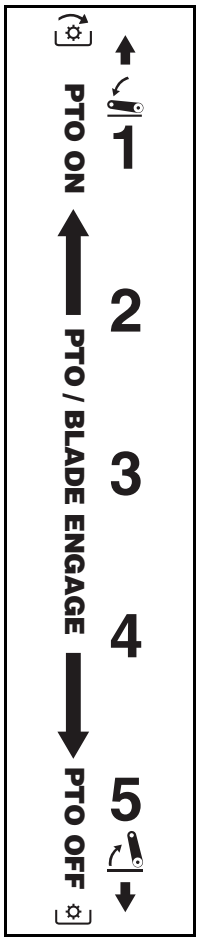
Deck Lift Lever

Found on your tractor's right fender, the deck lift lever is used to change the height of the cutting deck. To use, move the lever to the left, then place in the notch best suited for your application.

PTO (Blade Engage) Lever

Found on the tractor's right fender, the PTO (blade engage) lever is used to engage power to the cutting deck or other (separately available) attachments. To operate, move the lever all the way forward. Moving the lever all the way rearward into the PTO OFF position disengages power to the cutting deck/ attachment.

NOTE: *The PTO (blade engage) lever **must** be in the disengaged (PTO OFF) position when starting the engine.*



WARNING

AVOID SERIOUS INJURY OR DEATH

- GO UP AND DOWN SLOPES, NOT ACROSS.
- AVOID SUDDEN TURNS.
- DO NOT OPERATE THE UNIT WHERE IT COULD SLIP OR TIP.
- IF MACHINE STOPS GOING UPHILL, STOP BLADE(S) AND BACK DOWNHILL SLOWLY.
- DO NOT MOW WHEN CHILDREN OR OTHERS ARE AROUND.
- NEVER CARRY CHILDREN, EVEN WITH BLADES OFF.
- LOOK DOWN AND BEHIND BEFORE AND WHILE BACKING.
- KEEP SAFETY DEVICES (GUARDS, SHIELDS, AND SWITCHES) IN PLACE AND WORKING.
- REMOVE OBJECTS THAT COULD BE THROWN BY THE BLADE(S).
- KNOW LOCATION AND FUNCTION OF ALL CONTROLS.
- BE SURE BLADE(S) AND ENGINE ARE STOPPED BEFORE PLACING HANDS OR FEET NEAR BLADE(S).
- BEFORE LEAVING OPERATOR'S POSITION, DISENGAGE BLADE(S), PLACE THE SHIFT LEVER IN NEUTRAL, ENGAGE BRAKE LOCK, SHUT ENGINE OFF AND REMOVE KEY.

READ OPERATOR'S MANUAL

Ignition Switch Module

WARNING: Never leave a running machine unattended. Always disengage PTO, move shift lever into neutral position, set parking brake, stop engine and remove key to prevent unintended starting.

To start the engine, insert the key into the ignition switch and turn clockwise to the **START** position. Release the key into the **NORMAL MOWING MODE** position once the engine has fired.

To stop the engine, turn the ignition key counterclockwise to the STOP position. See Figure 7.

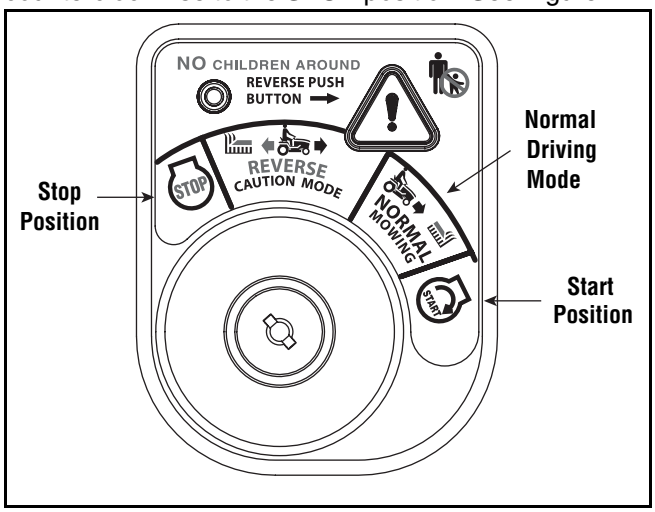


Figure 7

IMPORTANT: Prior to operating the tractor, refer to both **Safety Interlock Switches** on page 13 and **Starting The Engine** on page 14 of this manual for detailed instructions regarding the Ignition Switch Module and operating the tractor in **REVERSE CAUTION MODE**.

SECTION 5: OPERATING YOUR LAWN TRACTOR

Safety Interlock Switches

This tractor is equipped with a safety interlock system for the protection of the operator. If the interlock system should ever malfunction, do not operate the tractor. Contact an authorized service dealer.

- The safety interlock system prevents the engine from cranking or starting unless the parking brake is engaged, and the PTO (Blade Engage) knob (or lever) is in the disengaged (OFF) position.
- The engine will automatically shut off if the operator leaves the seat before engaging the parking brake.
- The engine will automatically shut off if the operator leaves the tractor's seat with the PTO (Blade Engage) lever in the engaged (ON) position, regardless of whether the parking brake is engaged.
- The engine will automatically shut off if the operator engages the PTO with the parking brake ON.
- With the ignition key in the **NORMAL MOWING** position, the engine will automatically shut off if the PTO (Blade Engage) lever is moved into the engaged (ON) position with the shift lever in Reverse.

WARNING: Do not operate the tractor if the interlock system is malfunctioning. This system was designed for your safety and protection.

Reverse Caution Mode

WARNING: Use extreme caution while operating the tractor in the **REVERSE CAUTION MODE.** Always look down and behind before and while backing. Do not operate the tractor when children or others are around. Stop the tractor immediately if someone enters the area.

The **REVERSE CAUTION MODE** position of the key switch module allows the tractor to be operated in reverse with the blades (PTO) engaged.

IMPORTANT: *Mowing in reverse is not recommended*.

To use the **REVERSE CAUTION MODE**:

IMPORTANT: *The operator MUST be seated in the tractor seat.*

1. Start the engine as previously instructed in this Operator's Manual.
2. Turn the key from the **NORMAL MOWING** (Green) position to the **REVERSE CAUTION MODE** (Yellow) position of the key switch module. See Figure 8.
3. Depress the **REVERSE PUSH BUTTON** (Orange, Triangular Button) at the top, right corner of the key switch module. The red indicator light at the top, left corner of the key switch module will be **ON** while activated. See Figure 8.
4. Once activated (indicator light **ON**), the tractor can be driven in reverse with the cutting blades (PTO) engaged.
5. Always look down and behind before and while backing to make sure no children are around.
6. After resuming forward motion, return the key to the **NORMAL MOWING** position.

IMPORTANT: The **REVERSE CAUTION MODE** will remain activated until:

   a. The key is placed in either the **NORMAL MOWING** position or **STOP** position.
   b. The operator engages the parking brake by fully depressing the brake pedal and holding it down while gently pushing the parking brake button inward.

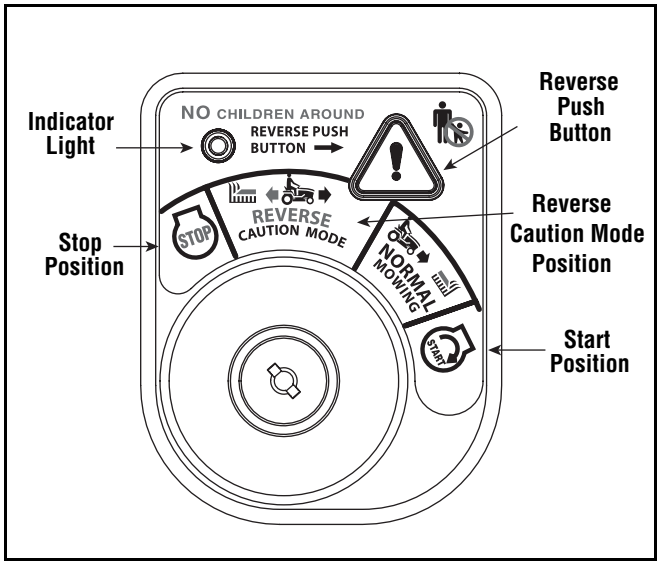


Figure 8

Engaging the Parking Brake

To engage the parking brake:

- Fully depress the brake pedal and hold it down with your foot while gently pushing the parking brake button inward.
- Hold the parking brake button in while removing your foot from the brake pedal.
- Once engaged, the parking brake button and the brake pedal will lock in the "down" position.

To disengage the parking brake:

- Slightly depress the brake pedal.

NOTE: *The parking brake must be set if the operator leaves the seat with the engine running or the engine will automatically shut off.*

Setting the Cutting Height

Select the height position of the cutting deck by placing the deck lift lever in any of the five different cutting height notches on the right side of the fender. Then adjust the deck wheels, if so equipped, so that they are between ¼-inch and ½-inch above the ground when the tractor is on a smooth, flat surface such as a driveway.

WARNING: Keep hands and feet away from the discharge opening of the cutting deck.

NOTE: *On models so equipped, the deck wheels are an anti-scalp feature of the deck and are not designed to support the weight of the cutting deck.*

Refer to **Making Adjustments** this manual for more detailed instructions regarding various deck adjustments.

Starting the Engine

WARNING: Do not operate the tractor if the interlock system is malfunctioning. This system was designed for your safety and protection.

NOTE: *Refer to the* **TRACTOR SET-UP** *on page 8 of this manual for Gasoline and Oil fill-up instructions.*

- Insert the tractor key into the ignition switch.
- Place the PTO (Blade Engage) knob (or lever) in the disengaged (OFF) position.
- Engage the tractor's parking brake.
- Activate the choke control.
- Turn the ignition key clockwise to the START position. After the engine starts, release the key. It will return to the ON position.

IMPORTANT: Do NOT hold the key in the START position for longer than ten seconds at a time. Doing so may cause damage to your engine's electric starter.

- After the engine starts, deactivate the choke control and place the throttle control in the FAST position.

NOTE: *Do NOT leave the throttle control in the CHOKE position while operating the tractor. Doing so will result in a "rich" fuel mixture and cause the engine to run poorly.*

Stopping the Engine

WARNING: If you strike a foreign object, stop the engine, disconnect the spark plug wire(s) and ground against the engine. Thoroughly inspect the machine for any damage. Repair the damage before restarting and operating

- If the blades are engaged, place the PTO (Blade Engage) knob (or lever) in the disengaged (OFF) position.
- Turn the ignition key counterclockwise to the **OFF** position.
- Remove the key from the ignition switch to prevent unintended starting.

Driving the Tractor

WARNING: Avoid sudden starts, excessive speed and sudden stops.

WARNING: Do not leave the seat of the tractor without first placing the PTO (Blade Engage) lever in the disengaged (OFF) position, depressing the brake pedal and engaging the parking brake. If leaving the tractor unattended, also turn the ignition key off and remove the key.

WARNING: Always look down and behind before and while backing up to avoid a backover accident.

- Depress the brake pedal to release the parking brake and let the pedal up.
- Move the throttle lever into the FAST (rabbit) position.
- Place the shift lever in either the FORWARD or REVERSE position.

IMPORTANT: Do NOT use the shift lever to change the direction of travel when the tractor is in motion. Always use the brake pedal to bring the tractor to a complete stop before shifting.

- Release the parking brake by depressing the clutch-brake pedal and positioning the speed control lever in desired position.

IMPORTANT: First-time operators should use speed positions 1 or 2. Become completely familiar with the tractor's operation and controls before operating the tractor in higher speed positions.

- Release clutch-brake pedal slowly to put unit into motion.
- The lawn tractor is brought to a stop by depressing the clutch-brake pedal.

NOTE: *When operating the unit initially, there will be little difference between the highest two speeds until after the belts have seated themselves into the pulleys during the break-in period.*

WARNING: Before leaving the operator's position for any reason, disengage the blades, place the shift lever in neutral, engage the parking brake, shut engine off and remove the key.

IMPORTANT: When stopping the tractor for any reason while on a grass surface, always

- Place the shift lever in neutral,
- Engage the parking brake,
- Shut engine off and remove the key.

Doing so will minimize the possibility of having your lawn "browned" by hot exhaust from your tractor's running engine.

If unit stalls with speed control in high speed, or if unit will not operate with speed control lever in a low speed position, proceed as follows.

- Place shift lever in NEUTRAL.
- Restart engine.
- Place speed control lever in highest speed position.
- Release clutch-brake pedal fully.
- Depress clutch-brake pedal.
- Place speed control lever in desired position.
- Place shift lever in either FORWARD or REVERSE, and follow normal operating procedures.

Driving on Slopes

Refer to the **SLOPE GAUGE** on page 7 to help determine slopes where you may operate the tractor safely.

WARNING: Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2-1/2 feet every 10 feet). The tractor could overturn and cause serious injury.

- Mow up and down slopes, NEVER across.
- Exercise extreme caution when changing direction on slopes.
- Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Avoid turns when driving on a slope. If a turn must be made, turn down the slope. Turning up a slope greatly increases the chance of a roll over.
- Avoid stopping when driving up a slope. If it is necessary to stop while driving up a slope, start up smoothly and carefully to reduce the possibility of flipping the tractor over backward.

Using the Deck Lift Lever

To raise the cutting deck, move the deck lift lever to the left, then place it in the notch best suited for your application. Refer to **Setting The Cutting Height** earlier in this section.

Engaging the Blades

Engaging the PTO (Blade Engage) transfers power to the cutting deck or other (separately available) attachments. To engage the blades, proceed as follows:

- Move the throttle control lever to the FAST (rabbit) position.
- Grasp the PTO (Blade Engage) lever and position it all the way forward into the engaged (ON) position.
- Keep the throttle lever in the FAST (rabbit) position for the most efficient use of the cutting deck or other (separately available) attachments

IMPORTANT: The engine will automatically shut off if the PTO is engaged with the shift lever in position for reverse travel with the ignition key in the **NORMAL MOWING** position. Refer to **Safety Interlock Switches** on page 13.

Mowing

WARNING: To help avoid blade contact or a thrown object injury, keep bystanders, helpers, children and pets at least 75 feet from the machine while it is in operation. Stop machine if anyone enters the area.

The following information will be helpful when using the cutting deck with your tractor.

WARNING: Plan your mowing pattern to avoid discharge of materials toward roads, sidewalks, bystanders and the like. Also, avoid discharging material against a wall or obstruction which may cause discharged material to ricochet back toward the operator.

- Do not mow at high ground speed, especially if a mulch kit or grass collector is installed.
- For best results it is recommended that the first two laps be cut with the discharge thrown towards the center. After the first two laps, reverse the direction to throw the discharge to the outside for the balance of cutting. This will give a better appearance to the lawn.
- Do not cut the grass too short. Short grass invites weed growth and yellows quickly in dry weather.
- Mowing should always be done with the engine at full throttle.
- Under heavier conditions it may be necessary to go back over the cut area a second time to get a clean cut.

- Do NOT attempt to mow heavy brush and weeds and extremely tall grass. Your tractor is designed to mow lawns, NOT clear brush.
- Keep the blades sharp and replace the blades when worn. Refer to **Cutting Blades** on page 20 of this manual for proper blade sharpening instructions.

Headlights

On some models, the lamps are ON whenever the tractor's engine is running. On other models, the lamps are ON whenever the ignition key is moved out of the STOP position.

On all models, the lamps turn OFF when the ignition key is moved to the STOP position.

SECTION 6: MAKING ADJUSTMENTS

WARNING: Never attempt to make any adjustments while the engine is running, except where specified in the operator's manual.

Leveling the Deck

NOTE: *Check the tractor's tire pressure before performing any deck leveling adjustments. Refer to* **Tires** *on page 20 for information regarding tire pressure.*

Front To Rear

The front of the cutting deck is supported by a stabilizer bar that can adjusted to level the deck from front to rear. The front of the deck should be between 1/4-inch and 3/8-inch lower than the rear of the deck. Adjust if necessary as follows:

- With the tractor parked on a firm, level surface, place the deck lift lever in the top notch (highest position) and rotate the blade nearest the discharge chute so that it is parallel with the tractor.
- Measure the distance from the front of the blade tip to the ground and the rear of the blade tip to the ground.
- The first measurement taken should be between 1/4" and 3/8" less than the second measurement. Determine the approximate distance necessary for proper adjustment and proceed, if necessary.
- Locate the jam nut and lock nut found on the front side of the stabilizer bracket. See Figure 9. After loosening the jam nut:
  Tighten the lock nut to raise the front of the deck;
  Loosen the lock nut to lower the front of the deck.

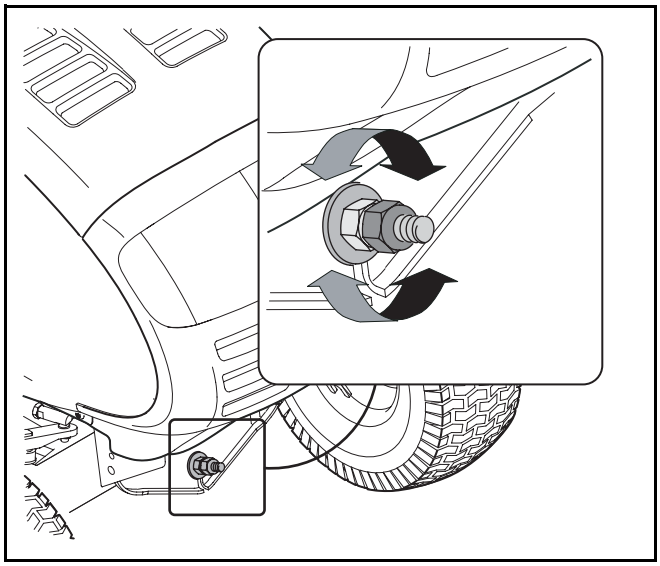


Figure 9

- Retighten the jam nut loosened earlier after proper adjustment is achieved.

Side to Side

If the cutting deck appears to be mowing unevenly, a side to side adjustment can be performed. Adjust if necessary as follows:

- With the tractor parked on a firm, level surface, place the deck lift lever in the top notch (highest position) and rotate both blades so that they are perpendicular with the tractor.
- Measure the distance from the outside of the left blade tip to the ground and the distance from the outside of the right blade tip to the ground. Both measurements taken should be equal. If they're not, proceed to the next step.

- Loosen, but do NOT remove, the hex screw on the left deck hanger bracket. See Figure 10.

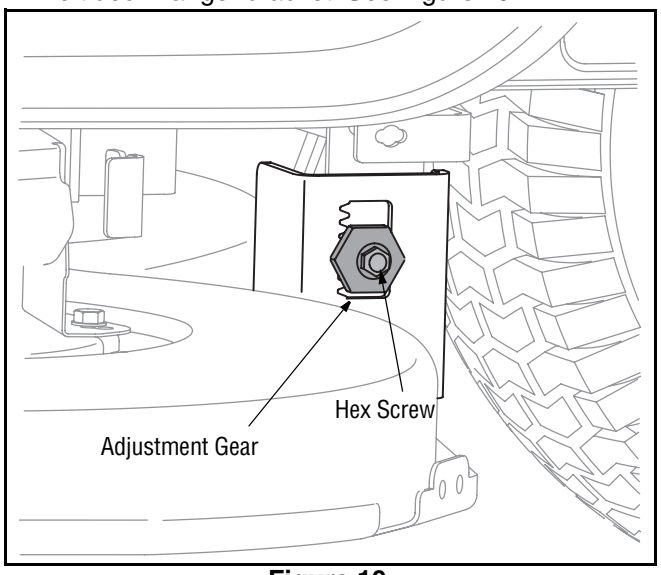


Figure 10

- Balance the deck by using a wrench to turn the adjustment gear (found immediately behind the hex cap screw just loosened) clockwise/up or counterclockwise/down.
- The deck is properly balanced when both blade tip measurements taken earlier are equal.
- Retighten the hex cap screw on the left deck hanger bracket when proper adjustment is achieved.

Parking Brake Adjustment

WARNING: Never attempt to adjust the brakes while the engine is running. Always disengage PTO, move shift lever into neutral position, stop engine and remove key to prevent unintended starting.

If the tractor does not come to a complete stop when the brake pedal is completely depressed, or if the tractor's rear wheels can roll with the parking brake applied, the brake is in need of adjustment. The brake disc can be found on the right side of the transmission in the rear of the tractor. Adjust if necessary as follows:

- Looking at the transmission from the right side of the tractor, locate the compression spring and brake disc. See Figure 11.

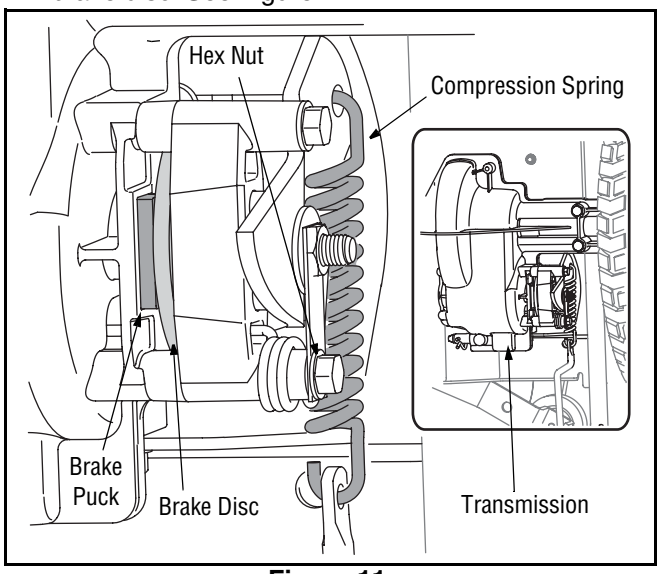


Figure 11

- Loosen, but do NOT remove, the hex nut found on the right side of the brake assembly. See Figure 11.
- Re-tighten the hex nut, allowing a gap of .011" between the brake disc and the brake puck. Use a feeler gauge to achieve a precise measurement.

Seat Adjustment

To adjust the position of the seat, loosen the two knobs on the bottom of the seat. See Figure 12. Slide the seat forward or backward as desired. Retighten the two knobs.

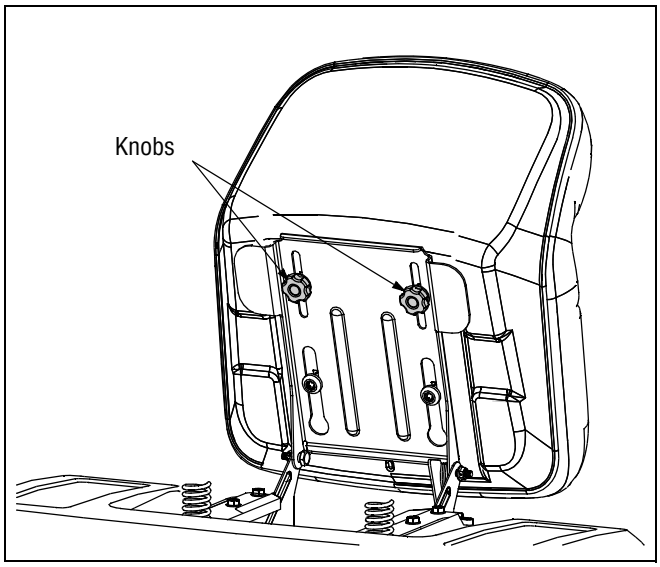


Figure 12

SECTION 7: MAINTAINING YOUR LAWN TRACTOR

WARNING: Before performing any maintenance or repairs, disengage PTO, move shift lever into neutral position, set parking brake, stop engine and remove key to prevent unintended starting.

Engine

Refer to the separate engine manual for engine maintenance instructions.

Check **engine oil level** before each use as instructed in the separate engine manual packed with your unit. **Follow the instructions carefully.**

Changing Engine Oil

NOTE: *Depending on the engine model found on your tractor, it may be necessary to remove the tractor's side panel in order to replace the oil filter (if so equipped).*

Changing Engine Oil

For draining oil from the engine's crankcase of select model tractors, a plastic oil drain sleeve is packed with this Operator's Manual. To drain the oil, proceed as follows:

- Unscrew the oil fill cap and remove the dipstick from the oil fill tube.
- Snap the small end of oil drain sleeve onto the oil sump. See Figure 13.

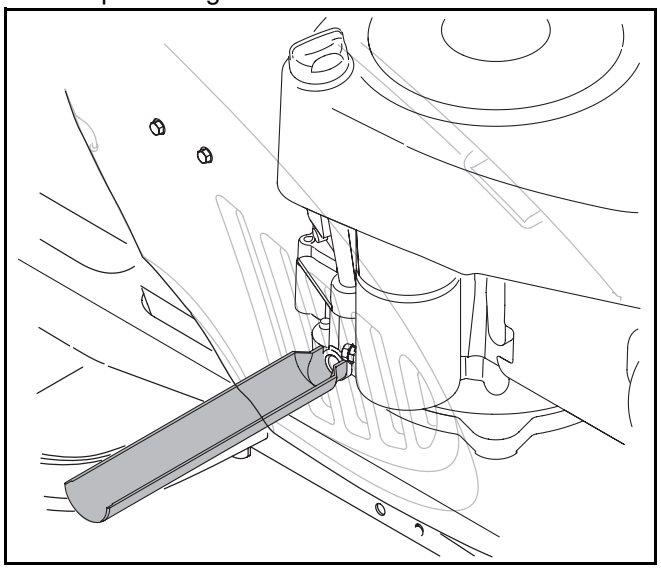


Figure 13

- Remove drain plug and drain oil into a suitable container with a capacity of no less than 64 oz.
- Service the **oil filter** (if so equipped) as instructed in the separate engine manual packed with your unit.

Perform the above steps in the opposite order after oil has finished draining.

- Refill the engine with new motor oil.

IMPORTANT: Refer to the separate engine manual packed with your unit for information regarding the quantity and proper weight of motor oil.

Air Cleaner

To service the air cleaner, refer to the separate engine manual packed with your unit

Fuel Filter

Service the fuel filter, if so equipped, as instructed in the separate engine manual packed with your unit.

Spark Plug(s)

The spark plug(s) should be cleaned and the gap reset once a season. Spark plug replacement is recommended at the start of each mowing season. Refer to the separate engine manual for correct plug type and gap specifications.

Lubrication

WARNING: Before lubricating, repairing, or inspecting, always disengage PTO, move shift lever into neutral position, set parking brake, stop engine and remove key to prevent unintended starting.

Engine

Lubricate the engine with motor oil as instructed in the separate engine manual packed with your unit.

Pivot Points & Linkage

Lubricate all the pivot points on the drive system, parking brake and lift linkage at least once a season with light oil.

Rear Wheels

The rear wheels should be removed from the axles once a season. Lubricate the axles and the rims well with an all-purpose grease before re-installing them.

Front Axles

Each end of the tractor's front pivot bar may be equipped with a grease fitting. Lubricate with a grease gun after every 25 hours of tractor operation.

Cleaning the Engine and Deck

Any fuel or oil spilled on the machine should be wiped off promptly. Do NOT allow debris to accumulate around the cooling fins of the engine or on any other part of the machine.

IMPORTANT: The use of a pressure washer to clean your tractor is NOT recommended. It may cause damage to electrical components, spindles, pulleys, bearings or the engine.

Deck Wash System™

A hex plug can be found on your tractor's deck surface. See Figure 14.

This plug can be replaced with a water port to be used as part of a separately-available deck wash system. Use the Deck Wash System™ to rinse grass clippings from the deck's underside and prevent the buildup of corrosive chemicals.

NOTE: *Refer to page 23 for information regarding this and other separately-available attachments & accessories for your tractor.*

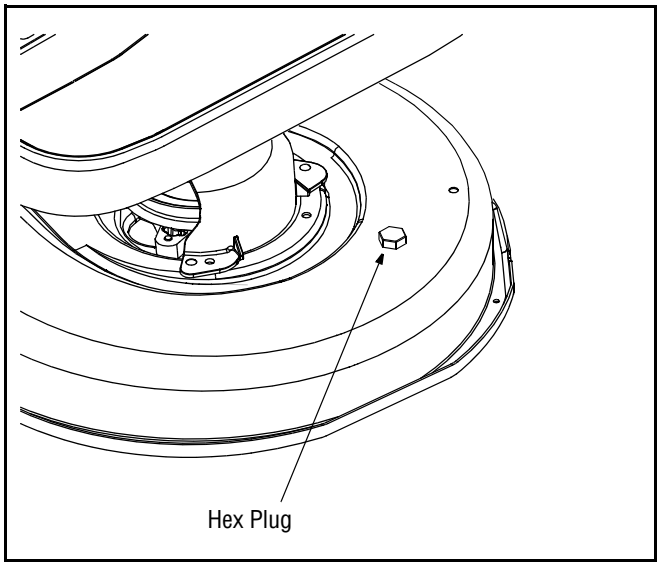


Figure 14

SECTION 8: SERVICE

Cutting Deck Removal

To remove the cutting deck, proceed as follows:

- Place the PTO (Blade Engage) lever in the disengaged (OFF) position.
- Engage the parking brake.
- Lower the deck by moving the deck lift lever into the bottom notch on the right fender.
- Remove the belt from around the tractor's engine pulley and idler pulley(s). Refer to **Changing the Deck Belt** on page 21 for detailed instructions. See Figure 20.
- Looking at the cutting deck from the left side of the tractor, locate the hair pin clip that secures the deck support rod on the rear left side of the deck. See Figure 15.
- Remove the hair pin clip that secures the deck support rod, and carefully remove the deck support from the deck lift arm.
- Repeat the above steps on the tractor's right side.
- Move the deck lift lever into the top notch on the right fender to raise the deck lift arms up and out of the way.
- Carefully remove the PTO cable from the rear of the cutting deck by removing the hair pin clip which secures it. Proceed to remove the spring from the deck idler bracket. See Figure 16.
- Gently slide the cutting deck toward the front of the tractor allowing the hooks on the deck to release themselves from the deck stabilizer rod.
- Gently slide the cutting deck (from the right side) out from underneath the tractor.

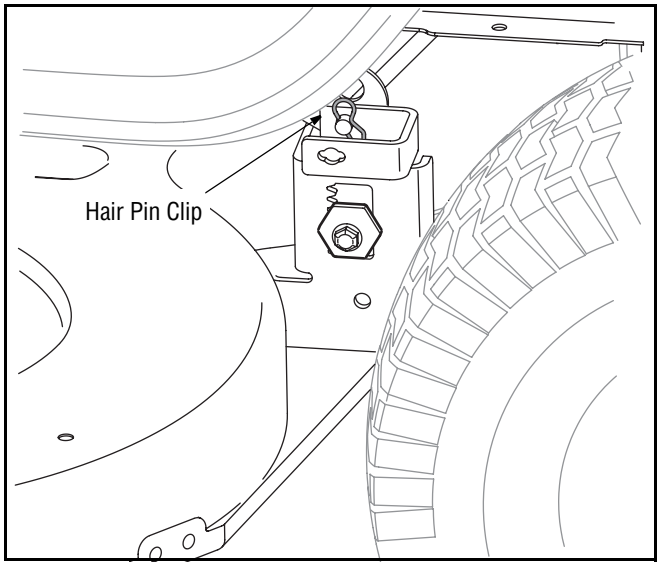


Figure 15

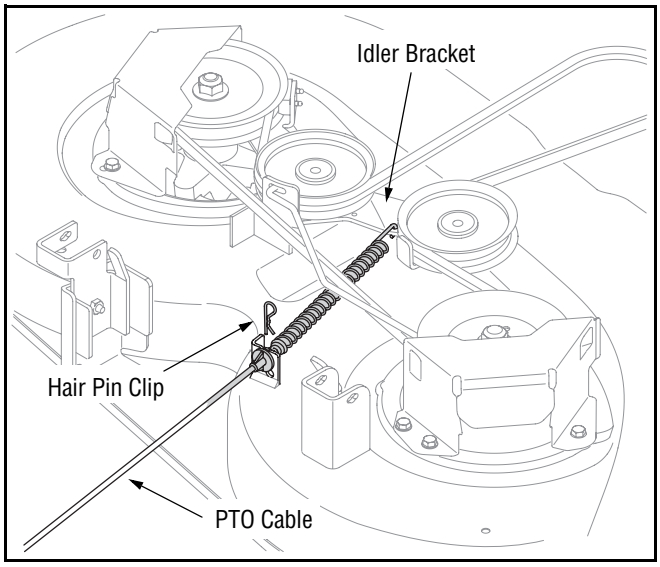


Figure 16

Tires

WARNING: Never exceed the maximum inflation pressure shown on the sidewall of the tire.

The recommended operating tire pressure is:

- Approximately 10 psi for the rear tires.
- Approximately 14 psi for the front tires.

IMPORTANT: Refer to the tire sidewall for exact tire manufacturer's recommended or maximum psi. Do not overinflate. Uneven tire pressure could cause the cutting deck to mow unevenly.

Battery

The battery is sealed and is maintenance-free. Acid levels cannot be checked.

- Always keep the battery cables and terminals clean and free of corrosive build-up.
- After cleaning the battery and terminals, apply a light coat of petroleum jelly or grease to both terminals.
- Always keep the rubber boot positioned over the positive terminal to prevent shorting.

IMPORTANT: If removing the battery for any reason, disconnect the NEGATIVE (Black) wire from it's terminal first, followed by the POSITIVE (Red) wire. When re-installing the battery, always connect the POSITIVE (Red) wire its terminal first, followed by the NEGATIVE (Black) wire. Be certain that the wires are connected to the correct terminals; reversing them could change the polarity and result in damage to your engine's alternating system.

Charging

If the tractor has not been put into use for an extended period of time, charge the battery with an automotive-type 12-volt charger for a minimum of **one hour at six amps**.

WARNING: Batteries give off an explosive gas while charging. Charge battery in a well ventilated area and keep away from an open flame or pilot light as on a water heater, space heater, furnace, clothes dryer or other gas appliances.

Jump Starting

WARNING: When removing or installing the battery, follow these instructions to prevent the screwdriver from shorting against the frame.

IMPORTANT: Never jump your tractor's dead battery with the battery of a running vehicle.

- Connect end of one jumper cable to the positive terminal of the good battery, then the other end to the positive terminal of the dead battery.
- Connect the other jumper cable to the negative terminal of the good battery, then to the **frame of the unit with the dead battery**.

WARNING: Failure to use this procedure could cause sparking, and the gas in either battery could explode.

Cleaning

Clean the battery by removing it from the tractor and washing with a baking soda and water solution. If necessary, scrape the battery terminals with a wire brush to remove deposits. Coat terminals and exposed wiring with grease or petroleum jelly to prevent corrosion.

Battery Failures

Some common causes for battery failure are:

- freezing
- undercharging
- overcharging
- corroded connections

These failures are NOT covered by your tractor's warranty.

Fuse

One 20 AMP fuse is installed in your tractor's wiring harness to protect the tractor's electrical system from damage caused by excessive amperage.

If the electrical system does not function, or your tractor's engine will not crank, first check to be certain that the fuse has not blown. It can be found under the hood mounted behind the dash panel on the right side.

WARNING: Always use a fuse with the same amperage capacity for replacement.

Cutting Blades

WARNING: Be sure to shut the engine off, remove ignition key, disconnect the spark plug wire(s) and ground against the engine to prevent unintended starting before removing the cutting blade(s) for sharpening or replacement. Protect your hands by using heavy gloves or a rag to grasp the cutting blade.

WARNING: Periodically inspect the blade spindles for cracks or damage, especially if you strike a foreign object. Replace immediately if damaged.

The blades may be removed as follows.

- Remove the deck from beneath the tractor, (refer to **Cutting Deck Removal** on page 19) then gently flip the deck over to expose its underside.
- Place a block of wood between the center deck housing baffle and the cutting blade to act as a stabilizer. See Figure 17.
- Use a 15/16" wrench to remove the hex flange nut that secures the blade to the spindle assembly. See Figure 17.

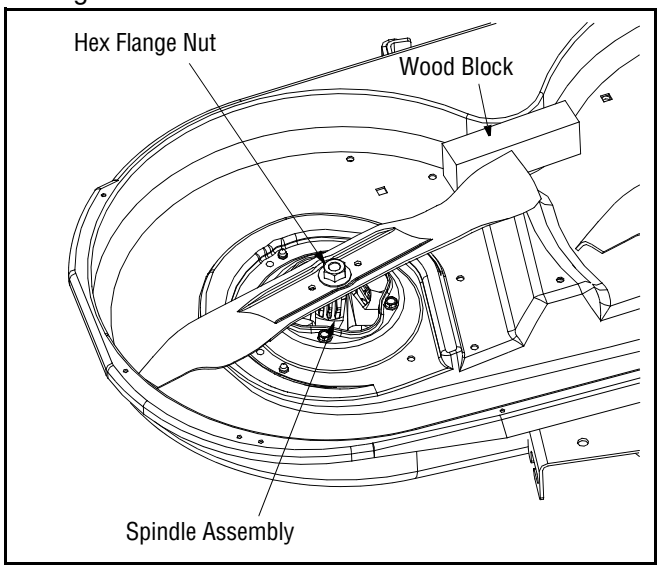


Figure 17

IMPORTANT:. If the cutting edge of the blade has already been sharpened to within 5/8" of the wind wing radius, or if any metal separation is present, replace the blades with new ones. See Figure 18.

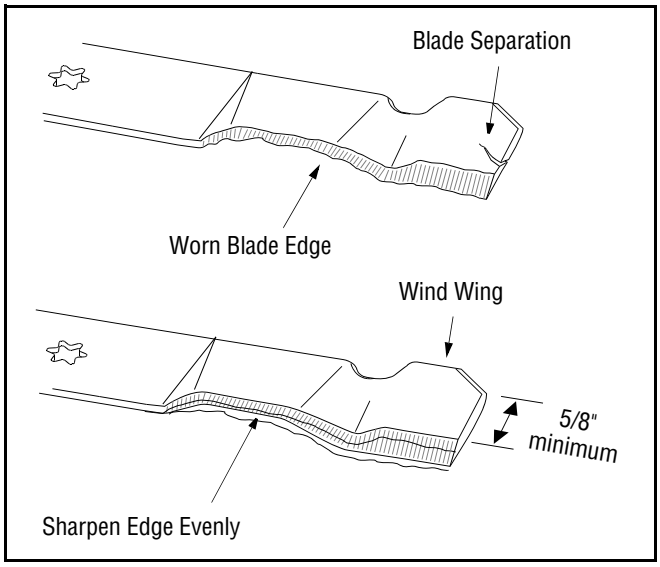


Figure 18

It is important that each cutting blade edge be ground equally to maintain proper blade balance.

A poorly balanced blade will cause excessive vibration and may cause damage to the tractor and result in personal injury. The blade can be tested by balancing it on a round shaft screwdriver. Grind metal from the heavy side until it balances evenly.

When replacing the blade, be sure to install the blade with the side of the blade marked ‘‘Bottom’’facing the ground when the mower is in the operating position.

IMPORTANT: Use a torque wrench to tighten the blade spindle hex flange nut to between 70 foot-pounds and 90 foot-pounds.

Changing the Transmission Drive Belts

NOTE: *Several components must be removed and special tools (i.e. air/impact wrench) in order to change the tractor's drive belts. See an authorized Troy-Bilt Service Dealer to have your drive belts replaced or phone Customer Support as instructed on page 2 for information on ordering a Service Manual.*

Changing the Deck Belt

WARNING: Be sure to shut the engine off, remove ignition key, disconnect the spark plug wire(s) and ground against the engine to prevent unintended starting before removing the belt(s).

WARNING: Avoid the possibility of a pinching injury. Do not place your fingers on the idler spring or between the belt and a pulley while removing the belt.

All belts on your tractor are subject to wear and should be replaced if any signs of wear are present.

IMPORTANT: The V-belts found on your tractor are specially designed to engage and disengage safely. A substitute (non-OEM) V-belt can be dangerous by not disengaging completely. For a proper working machine, use factory approved belts.

To change or replace the deck belt on your tractor, proceed as follows:

- Lower the deck by moving the deck lift lever into the bottom notch on the right fender.
- Remove the belt guards by removing the self-tapping screws that fasten them to the deck.
- Remove the belt keeper rod from around the engine pulley.
- Insert a 3/8"-drive ratchet wrench (set to *loosen*) into the square hole found in the idler bracket on the left side of the deck's surface. See Figure 19.
- Grasp the ratchet's handle and pivot it toward the front of the tractor to relieve tension on the belt.
- With belt tension relieved, **carefully remove the belt from around the left-hand spindle pulley**.

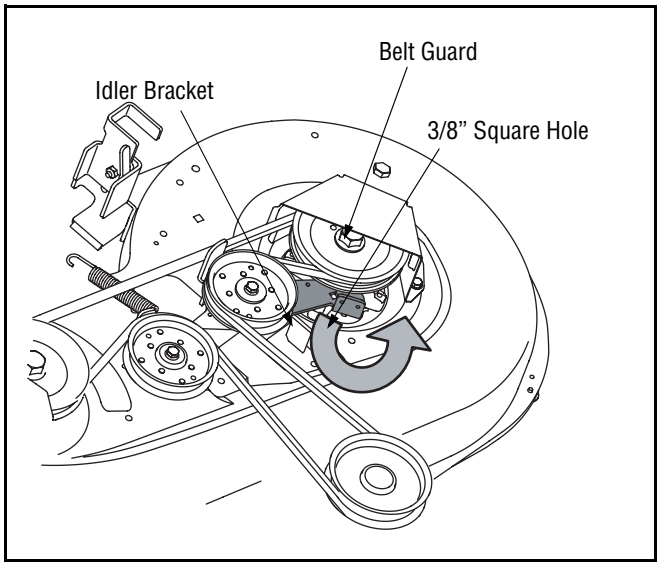


Figure 19

IMPORTANT: Carefully allow the ratchet to pivot rearward before removing it from the square hole.

- Remove the deck belt from around all pulleys, including the deck idler pulley.
- Route the new belts (deck belt first).
- Remount the belt guards removed earlier.

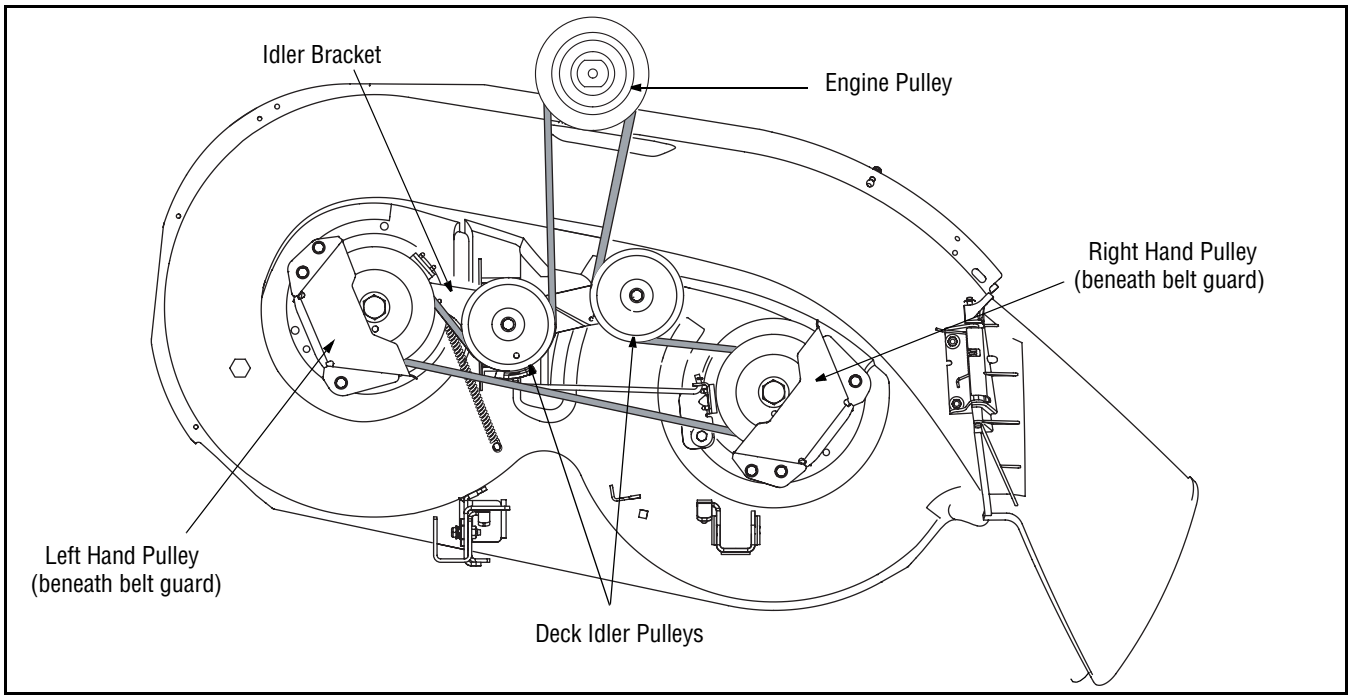


Figure 20

SECTION 9: OFF-SEASON STORAGE

Clean and lubricate the tractor as instructed in **Section 7: MAINTAINING YOUR LAWN TRACTOR** on page 18 of this manual before storing for an extended period.

WARNING: Drain fuel only into an approved container outdoors, away from an open flame. Allow engine to cool. Extinguish cigarettes, cigars, pipes, and other sources of ignition prior to draining fuel.

Follow the instructions in the **Service, Storage & Specifications** section of the separate engine manual for proper engine care prior to storing your tractor.

WARNING: Never store the machine or fuel container indoors where there is an open flame, spark or pilot light such as on water heater, furnace, clothes dryer or other gas appliance.

SECTION 10: ATTACHMENTS & ACCESSORIES

The following attachments and accessories are compatible for 700-Series Lawn Tractors. See the retailer from which you purchased your tractor or an authorized Service Dealer for information regarding price and availability.

NOTE: *Model Series 700 Lawn Tractors are NOT designed for use with any type of ground-engaging attachments (e.g. tiller or plow). Use of this type of equipment WILL void the tractor's warranty.*

MODEL	DESCRIPTION
OEM-190-116	38- and 42-inch Deck Mulch Kit
OEM-190-672	Grille Guard (mounts on front of tractor)
OEM-190-180	Twin Bagger Grass Collector
OEM-190-184	Dethatcher
OEM-190-218	Rear Wheel Weights
OEM-190-658	Tire Chains
OEM-190-032	42-inch Two-stage Snow Thrower
OEM-190-833	46-inch Front Dozer Blade
490-900-0024	Deluxe Tractor Sunshade
490-900-0025	Deck Wash Kit

* Not compatible with tractors equipped with a Grass Collector

SECTION 11: TROUBLESHOOTING

Trouble	Possible Cause(s)	Corrective Action
Engine fails to start	PTO engaged. Parking brake not engaged. Spark plug wire(s) disconnected. Throttle control lever not in correct starting position. Choke not activated. Fuel tank empty, or stale fuel. Blocked fuel line. Faulty spark plug. Engine flooded.	Place PTO lever in disengaged (OFF) position. Engage parking brake. Connect wire(s) to spark plug(s). Place throttle control in CHOKE position. Place the throttle control in CHOKE position. Fill tank with clean, fresh (less than 30 days old) gas. Clean fuel line or replace fuel filter, if so equipped. Clean, adjust gap or replace plug. Crank engine with throttle in FAST position.
Engine runs erratic	Unit running with CHOKE applied. Spark plug wire(s) loose. Blocked fuel line or stale fuel. Vent in gas cap plugged. Water or dirt in fuel system. Dirty air cleaner.	Move the throttle control out of the CHOKE position. Connect and tighten spark plug wire(s). Clean fuel line; fill tank with clean, fresh (less than 30 days old) gasoline. Replace fuel filter, if so equipped. Clear vent or replace cap if damaged. Drain fuel tank. Refill with clean, fresh (less than 30 days old) gasoline. Replace air cleaner cartridge/element or clean pre-cleaner, if so equipped.
Engine overheats	Engine oil level low. Air flow restricted.	Fill crankcase with proper capacity and weight of oil. Clean grass clippings and debris from around the engine's cooling fins and blower housing.
Engine hesitates at high RPM	Spark plug(s) gap too close.	Remove spark plug(s) and reset the gap.
Idles poorly	Spark plug(s) fouled, faulty or gap too wide. Dirty air cleaner.	Replace spark plug(s). Set plug(s) gap. Replace air cleaner cartridge/element or clean pre-cleaner, if so equipped.
Excessive vibration	Cutting blade loose or unbalanced. Damaged or bent cutting blade.	Tighten blade and spindle. Balance blade. Replace blade.
Mower will not mulch grass	Engine speed too low. Wet grass. Excessively high grass. Dull blade.	Place throttle control in FAST (rabbit) position. Do not mow when grass is wet; wait until later to cut. Mow once at a high cutting height, then mow again at desired height or make a narrower cutting swath. Sharpen or replace blade.
Uneven cut	Deck not balanced properly. Dull blade. Uneven tire pressure.	Perform side-to-side deck adjustment. Sharpen or replace blade. Check tire pressure in all four tires.

SECTION 12: THREE YEAR LIMITED WARRANTY

For three (3) years from the date of original purchase of our products, we will either repair or replace, at its option, free of charge, F.O.B. Factory or authorized service firm, any part found to be DEFECTIVE IN MATERIAL and WORKMANSHIP for the original purchaser. all transportation charges on parts submitted for replacement under this warranty must be paid by the purchaser unless return is requested by the manufacturer.

This warranty DOES NOT apply to any part which has become inoperative through misuse, excessive use, accident, neglect, improper maintenance or alterations by unauthorized persons.

The limited warranty does not extend to the replacement of parts which are not defective, but where regular usage has exhausted the life of the part.

ENGINES, ELECTRIC START KITS, PEERLESS TRANSMISSIONS AND PEERLESS TRANSAXLES ARE WARRANTED BY THEIR RESPECTIVE MANUFACTURER. ALL CLAIMS AGAINST THESE COMPONENTS MUST BE HANDLED THROUGH THE RESPECTIVE MANUFACTURER'S SERVICE DEALERS.

Belts, light bulbs, clutch parts (friction wheels), grass bags, tires, seats, rider deck wheels and cutting blades are covered by a 60 day limited warranty.

Batteries are covered by a 90 day limited warranty.

Fuses, shear bolts and blade adapters are considered consumable items and as such are not warranted.

NOTE: Regular maintenance replacement parts and related inspections and adjustments are excluded from coverage when made as part of normal maintenance service.

TRACTOR ATTACHMENT WARRANTY

Mower decks included with your product, or sold separately, as an attachment for your garden tractors will be warranted according to the above terms of the manufacturer three (3) year limited consumer warranty.

ALL OTHER ATTACHMENTS will be sold under the same condition as above except the warranty will be ONE YEAR FROM DATE OF ORIGINAL PURCHASE.

PERSONAL USE

THE FOREGOING PARAGRAPHS CONSTITUTE THE MANUFACTURER'S ENTIRE WARRANTY WITH RESPECT TO ANY PRODUCT PURCHASED AND USED FOR PERSONAL FAMILY, HOUSEHOLD/RESIDENTIAL PURPOSES, AS DISTINGUISHED FROM COMMERCIAL USAGE.

COMMERCIAL USE

ALL APPLICATIONS OTHER THAN PERSONAL USE AS OUTLINED ABOVE, ARE CONSIDERED COMMERCIAL USAGE.

New products purchased for commercial usage are warranted in the same manner and to the same extend EXCEPT the term of warranty will be 60 DAYS from date of purchase.

WARRANTY SERVICE CAN ONLY BE PERFORMED BY AN AUTHORIZED SERVICE DEALER. ANY NON-ORIGINAL EQUIPMENT REPLACEMENT PART USED ON OR IN A PRODUCT UNDER WARRANTY WILL BE EXCLUDED FROM THAT WARRANTY COVERAGE, AS WILL BE ANY RELATED DAMAGED COMPONENTS RESULTING FROM THE INSTALLATION OF A REPLACEMENT PART FROM ANOTHER SOURCE OTHER THAN THE MANUFACTURER.